WHAT IS CLAIMED IS:

1. An axial shaft seal disposed between a housing wall and a rotating shaft, the axial shaft seal comprising:

an outer ring insertable into the housing wall in a stationary and sealing manner, the outer ring including a sleeve including a polymer material extending radially inward and having a spring bellows form, a radially inward end portion of the sleeve having a first sealing surface; and

an inner ring connectable to the shaft in a non-twisting and sealing manner and including a ring flange extending radially outward so as to provide a second sealing surface for axially mating the first sealing face.

2. The axial shaft seal as recited in claim 1, wherein the inward end portion of the sleeve includes circular ring extending in a radial direction.

3. The axial shaft seal as recited in claim 1, wherein the inward end portion deviates from a radial normal direction by up to max. 30°, when not axially mating the second sealing surface.

4. The axial shaft seal as recited in claim 2, wherein the circular ring includes one or more sealing surfaces.

5. The axial shaft seal as recited in claim 1, wherein the first sealing surface includes lubricant-recirculating grooves.

6. The axial shaft seal as recited in claim 1, wherein the first sealing surface includes a friction-reducing coating.

7. The axial shaft seal as recited in claim 6, wherein the coating includes PTFE.

8. The axial shaft seal as recited in claim 1, wherein the sleeve includes a folded bellows.

9. The axial shaft seal as recited in claim 8, wherein the bellows open toward a lubricant side of the seal.

10. The axial shaft seal as recited in claim 1, wherein the outer ring includes a reinforcement member.

11. The axial shaft seal as recited in claim 2, wherein the circular ring includes a reinforcing plate.

12. The axial shaft seal as recited in claim 1, wherein the ring flange includes lubricant-recirculating grooves.

13. The axial shaft seal as recited in claim 1, wherein the inner ring is made of metal.

14. The axial shaft seal as recited in claim 1, wherein the inner ring is at least partially sheathed with a polymer material.

15. The axial shaft seal as recited in claim 1, wherein the inner ring includes a plurality of projections extending radially inward for providing an axial stop with a shoulder of the shaft.

16. The axial shaft seal as recited in claim 1, wherein the inner ring includes a circular flange for providing an axial stop with a shoulder of the shaft.

17. The axial shaft seal as recited in claim 1, wherein the ring flange includes a radial extension having an outer portion, and further comprising a sensor disposed at the housing wall and one of a transmitter wheel and a multi-pole wheel cooperating with the sensor to measure at least one of a rotational speed and shaft displacement.

18. The axial shaft seal as recited in claim 1, wherein the inner ring includes a cylindrical part, and further comprising an auxiliary flange disposed on the housing wall, a sensor disposed on the auxiliary flange and one of a transmitter wheel and a multipole wheel for cooperating with the sensor.

19. The axial shaft seal as recited in claim 1, wherein the inner ring includes a cylindrical part that includes one of a transmitter wheel and a multipole wheel, and further comprising an auxiliary ring having a non-repellant washer mounted, the outer ring being mounted in the auxiliary ring.

20. The axial shaft as recited in claim 19, wherein the washer is made of a non-woven material.